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Instructional Message Design: Theory, Research, and Practice

Chapter 4: Message Design for Instructional Designers - Human Performance Technology

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Chapter 4: Message Design for Instructional Designers - Human Performance Technology

Dana Garcia

Key Points:

- **Human Performance Technology** is the use of principles and models to systematically improve changes in human behavior.
- **Interventions** are performance improvement efforts.
- **Instructional interventions** are the most popular choice to change human performance, but they are often the most expensive.

Abstract

“We cannot teach people anything, we can only help people discover it within themselves.” (Galileo)

How often do you take on an assignment or responsibility and reflect I knew how to do it better, but I didn't? I'll do better next time. Do you really do better next time? Maybe? Honestly, probably not but why is that? Human Performance Technology is focused on answering those questions. It gets to the root cause of why we don't meet desired performance levels. The value of finding foundational causes for performance deficiencies is maximizing human capital because the largest expense of most companies is payroll. The most common investment in their employees is providing more opportunities for instruction and training; but more knowledge does

not necessarily yield more productivity. Understanding the principles and models of human performance present a strategic advantage to steer human behavior with instructional message design investments and solutions.

Introduction

Human Performance Technology (HPT) is a systematic approach to improving human performance (Pershing, 2006). HPT is a flexible, interdisciplinary approach combining products behavioral psychology, systems theory, management science, and even neuroscience (Gilley, Dean, & Bierema, 2009). Broken down by each term (Rothwell, Hohne, & King, 2007):

Human – An individual or an organization.

Performance – The results of an activity or behavior

Technology – The practical application of knowledge.

The goal of HPT is to bridge the gap between ‘what people are doing’ and ‘what they should be doing.’ Effective instructional message design concentrates and adapts to these performance gaps. Often an instructional intervention is warranted to pass on information that the user would need to use to improve their performance on a given task or activity. Effective instructional message design is an important factor in instructional solutions, especially in the context of training and on-demand job aids. After lesson implementation, instructional interventions are evaluated on whether they increase or decrease human performance. Was the training worth the time and money?

Human Performance Theory Principles

The four principles of HPT provide a framework to pursue human performance changes in organized, prescribed ways (Tosti, 2010). The combination of these principles is applied into an

intervention; an instrument of change. Instructional interventions are often the most popular performance intervention.

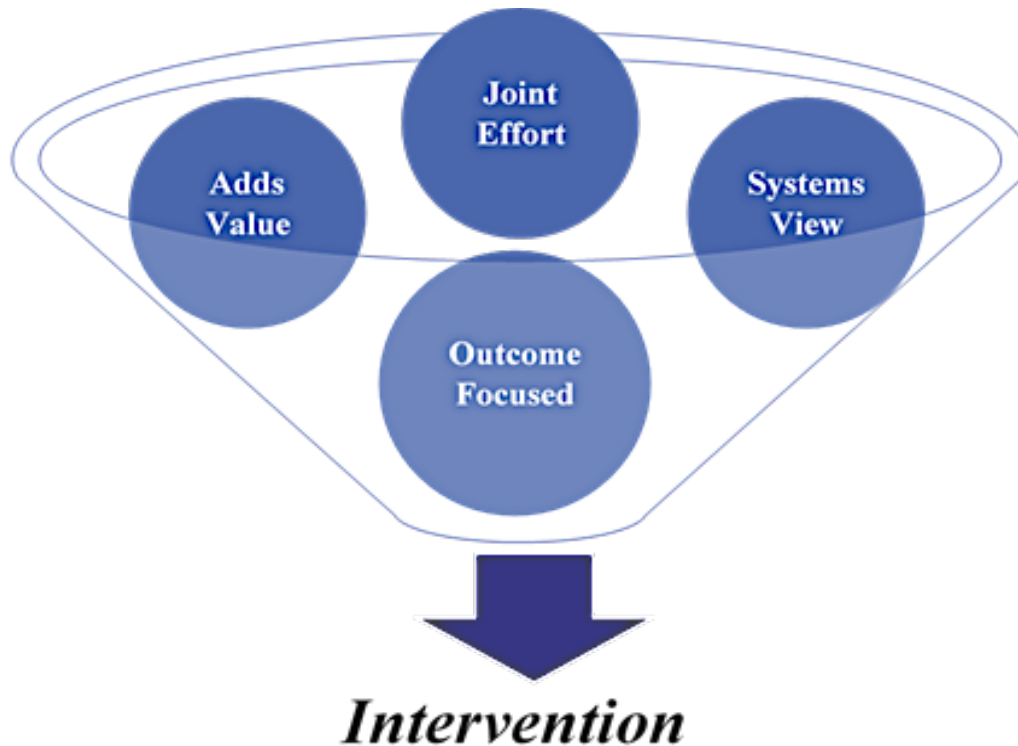


Figure 1. Performance Principles

Value Added

HPT seeks to align instructional goals with actual human performance to achieve results. Training should engage the intended audience at their level of expertise.

Joint Effort

Collaboration is essential to remove barriers for change; instructional designers work in partnership with instructors, students, and managers. There is no task isolation within the HPT model and all resources are considered.

Systems View

HPT uses a holistic approach to problem solving. Instructional analysis is focused on how everything works together instead of on the sum of individual parts.

Outcome Focused

Instructional designers use HPT to concentrate design on the desired results first, then work backwards to connect the human behavior that will produce those results.

Intervention

An intervention is a course of action to improve human performance. Instructional interventions seek to establish new schema or improve existing schema (other interventions could include organizational, management, or technological change).



Figure 2. For pilots trained on the Boeing 737 (an existing schema), could an online course presented on an Apple iPad be enough training to be able to fly the new Boeing 737 MAX? (to create a new schema?)

Intervention gone wrong

The Boeing 737 MAX was the fastest selling aircraft in the company's history. In 2019, the United States' Federal Aviation Administration (FAA) grounded the 737 MAX after two tragic crashes within five months that killed 346 people. Boeing's choice of a 737 derivative over a new aircraft meant cheaper production because derivatives were grandfathered in from the FAA's newer design requirements (Vartabedian, 2019). Instructional design followed the same easy and fast style of 737 MAX production; human performance principles were not followed and the instructional interventions were terrible. The instructional interventions provided to pilots were:

- A two hour training video on an iPad
- A 13-page manual on differences between the 737 MAX and earlier models (AppleInsider, 2019).

That's it. No value added instruction with simulators; instead, pilots were given 45 minutes to familiarize themselves with the aircraft before they flew a 737 MAX full of passengers. There was no joint effort for aviation excellence; instead, pilots were reprimanded for voicing safety concerns and requesting additional training. Only parts not the entire system of instrumentation changes were included in the training. The Maneuvering Characteristic Augmentation System (MCAS), which was the critical failure in both crashes when it took over flight control, was not mentioned in the iPad training (Gates, 2019). The outcome focused on cheap not effective training.

Traditional HPT Model

There are five features to the basic working model of Human Performance Technology by the International Society for Performance Improvement (ISPI) (Dessinger, Moseley, & Tiem, 2012). The ISPI HPT model is used for development of interventions that improve an issue or discover a new opportunity.

If you get a sense of déjà vu with the HPT model, you are not imagining things! The HPT model is very close to Instructional Design's ADDIE (Analysis, Design, Development, Implementation,

and Evaluation) conceptual process model. The biggest difference is the HPT model has more focus on analysis. Because each situation is unique, the HPT model is flexible and does not require all five features.

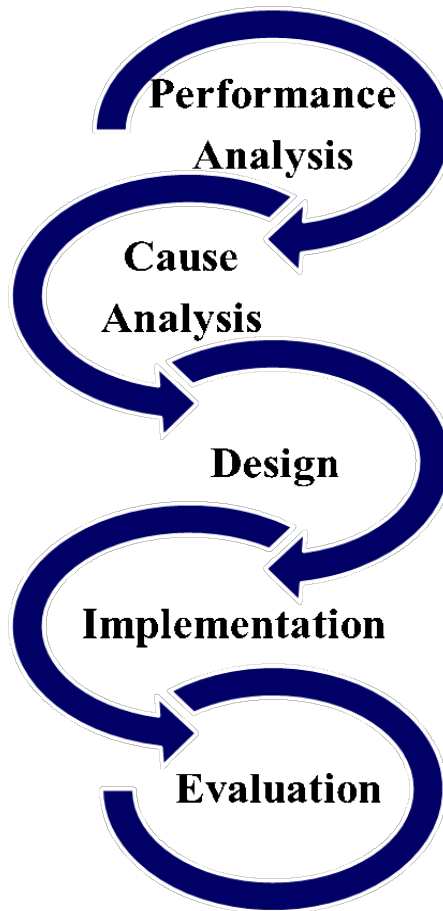


Figure 3. The HPT Process Model

Performance Analysis

Performance analysis uses data collection to identify the performance issue or improvement opportunity. It is important for instructional designers to understand the circumstantial dynamics contributing to the subject. Common tools are observation, interviews, surveys, and document review. Performance analysis is further broken down into three analyses (Kang, 2016):

1. Organizational analysis is used to determine the desired performance. What are the goals of this instructional platform? Are goals too broad? What are the critical issues? Describe the mission, policies, and values.
2. Environmental analysis is used to identify and prioritize what knowledge, tools and skills exist. Who is the audience? Are learners experts or novices? What is the culture around this process? What is actually getting done?
3. Gap analysis is used to determine the difference between the desired performance and current performance. Identifying the root cause of performance gaps is critical to developing viable instructional interventions (Stefaniack, 2018).



Figure 4. A Performance Gap is the difference between the existing status of a system and the desired status.

Ever sit in an exit row on an airplane? Organizational analysis provides the goal that, as a passenger, you are able and willing to assist in an emergency. Environmental analysis identifies resources provided to achieve those goals such as video instruction, airplane safety placards, human demonstrations, and verbal acknowledgments. It also includes the performance history of passengers assisting with emergencies. Gap analysis addresses the question: could you really help in an emergency? Any doubts or abilities indicate a performance gap; How heavy are the exit doors? Can I drink alcohol on this flight? If weight and alcohol questions were addressed, would passengers actually ask to be reseated?

Cause Analysis

Cause analysis is used to identify the root cause of the performance gap. The Behavior Engineering Model (BEM) identifies six sectors influencing behavior that can be re-engineered to change performance (Gilbert, 2007). It considers the individual capabilities and the environmental support in which they function. Instructional interventions are the most popular choice of how to improve human performance (BCODN, 2012).

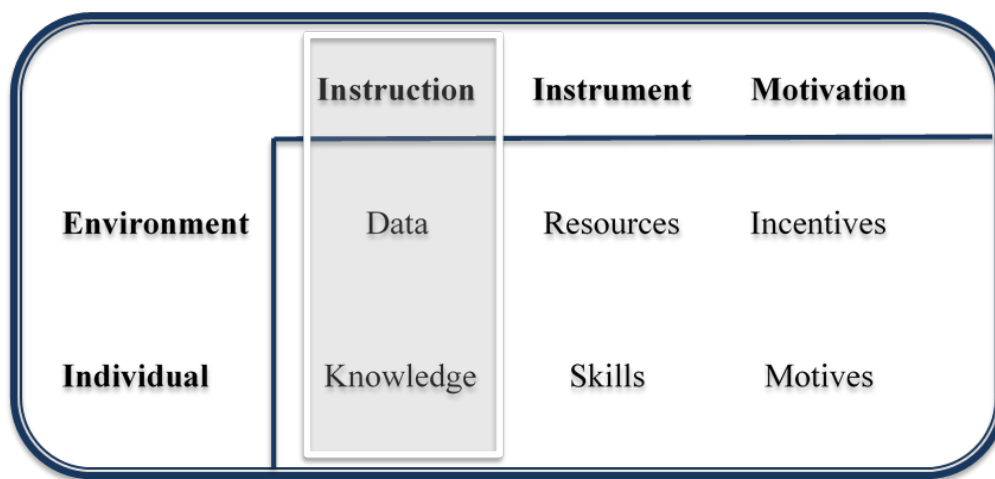


Figure 5. The Behavior Engineering Model

Examples of causes for the performance gap of airplane passengers:

Environmental options:

- Are passenger expectations clearly defined? (Data)
- Are passenger screening tools adequate? (Resources)
- Does legroom motivate passengers to help? (Incentives)

Individual options:

- Do passengers know when to help? (Knowledge)
- Are passengers strong enough? (Skills)
- Are passengers willing to help others? (Motives)

Design

Design is a busy feature in the HPT model, as development happens here as well. It includes the following tasks:

- Translate the performance gap into performance objectives.
- Select the intervention.
- Assess audience needs and capabilities.
- Construct an intervention blueprint.
- Develop and test a prototype.
- Refine and produce the intervention.

The performance objectives are highly dependent on the results of the cause analysis; instructional designers need to have a comprehensive understanding of the situation. Continuing the airplane situation, performance objectives can be matched to possible interventions (Rossett, 2006):

<u>Cause</u>	<u>Possible intervention methods</u>
Instructional	Training Job aids
Instrumentation	Task redesign New tools
Motivation	Revise policies Incentives

The Visual, Auditory, and Kinesthetic (VAK) model offers a simple way to breakdown the way humans learn (McMillian, 2017). This insight allows alignment of instruction delivery with the audience needs and capabilities. For the airplane example, developing a product for each learning style would maximize informational effectiveness for the wide variety of passengers.

<u>Learning Style</u>	<u>Learning formats</u>
Visual	Diagrams Pictures Video
Auditory	Verbal instructions Catchy tunes
Kinesthetic	Mockups (or partially functional prototypes) Movement (hands on) simulations

A design blueprint is formulated from performance objectives, intervention methods, and learning formats. The final piece to the design blueprint is determining the skill level of the audience. Is the intervention being provided to expert or novice learners? The intervention needs to be presented at the appropriate knowledge level.

Development produces prototypes of instructional products which are devised from the design blueprint. Testing prototypes provides feedback to refine the instructional intervention. The development cycle continues until the performance objectives are satisfied. Once the final version approval is received, the content is prepared for execution.

Implementation

Whether the instructional intervention is new concepts or improvements, change happens with implementation. Implementation is where the design plan meets the learner, and the instructional

intervention is delivered (Hodell, 2016). The ADKAR model helps individuals process change, since change is more about people's reaction to it than the change itself (Prosci, n.d.). The model breaks down change management into a sequential process.

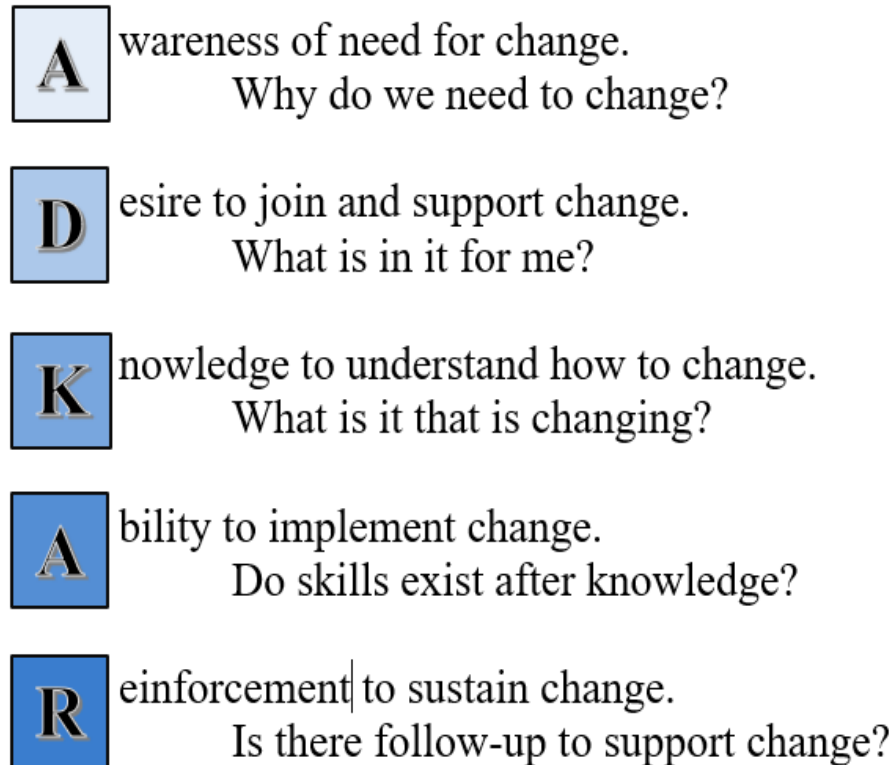


Figure 6. The ADKAR human performance technology development model

A popular change movement is the elimination of plastic straws due to environmental concerns (Ellefson, 2018). News stories about the amount of plastic ingested by sea life generated awareness of the need for change. Usage of straws was portrayed as selfish and inconsiderate to sea life; peer pressure produced a desire to change. Knowledge of how to change is the instructional intervention of the movement; infographics provide impact information and plastic straw alternatives. Ability is adapting to an alternative such as metal straws; how do you carry it around and clean it? As a result of the movement's success, laws were enacted to ban plastic straws and

reinforce progress. What HPT message does a restaurant transitioning to paper straws mean to you?



Figure 7. A seemingly simple human performance technology tool (a design that requires no instructions) is now possibly an unintended aspect of the impact of technology on climate change

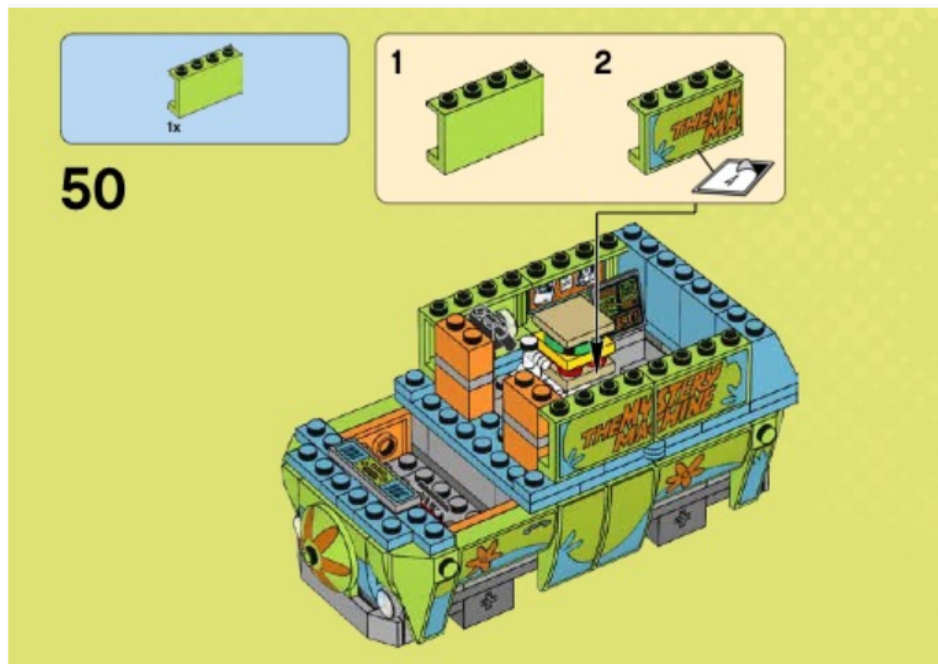
Evaluation

The goal of evaluation is to provide a means for continuous improvement and identify the impact of the instructional intervention (Wilmoth, Prigmore, & Bray, 2014).

- Formative evaluation is a continuous assessment of the value of instructional interventions while they are designed, developed, and implemented. The purpose is to identify instructional deficiencies in meeting performance objectives.
- Summative evaluation measures effectiveness of the instructional intervention. Surveys and questionnaires are often used to determine the impact of the instructional intervention.

HPT and Message Design Examples

Analyzing instructional message designs is useful to identify good and bad applications of HPT principles and models. Job aids are instructional message designs that help learners perform a task. Is text necessary? A job aid is intended to be a cost effective, easy to use tool, with minimized use of text that is used to help a learner perform a specific series of tasks. A job aid can take many forms, such as checklists, quick start guides that accompany a larger more complex manual, reminder notes and control surface labels, or 3D replicas. Job aids are inherently instructional in nature in that they are used to communicate information from a subject matter expert to a learner to improve performance. The job aid message design in Figure 7 is an example of a text minimalist approach, which also reduces costs by relying almost solely on graphics (and avoiding text that would have to be translated to sell the toy or collectible in international markets).



<https://www.lego.com/en-us/service/buildinginstructions/search?initialsearch=75902#?text=75902>

Figure 7. A LEGO job aid, would text be helpful? Or is the imagery enough to describe how to assemble this project (in step 2, would you know that a sticker is supposed to be applied to this part)?

(<https://www.lego.com/biassets/bi/6135001.pdf> p. 35

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Passenger safety onboard airlines is a serious matter. When and why is humor appropriate? Getting the attention of learners is an important message design consideration, especially given the probability of passengers not performing procedures correctly during an emergency. For instance, a tragic engine failure in 2017 required Southwest passengers on to put on their oxygen masks. News media reports after the incident included video of passengers incorrectly wearing the masks, even after the safety presentation given at the start of every flight (Cummings, 2018). Meyer's personalization and voice principle of multimedia learning theory suggests teaching in an informal conversational style and adding humor (Clark & Mayer, 2016; Mayer, 2018). Does this departure from the traditional, forgettable pre-flight safety presentation change the message design impact learning of airline seat buckle, exit door, or oxygen mask procedures? Or does the new message approach, as seen in Figure 8, calm and relax nervous passengers, and help serve to get learners/passengers attention?



Figure 8. Two different approaches to airline safety videos, does the humor introduced by a video of the safety presentation being presented in a movie theater relax passengers and break the schema of a normally forgettable presentation.

User interfaces are supposed to be simple and easy to use. Does change translate to improvement? Not always, unless a very thorough and systematic approach is taken during the analysis phase of a human performance technology project. For instance, Apple iPhone users have had to create and learn a new message design schema when the familiar home button was removed (see Figure 9). The home button had been a standard feature of the iPhone since the original was released in 2007. Now users had to adjust and learn to use the device's new face recognition system and new swipe motions (Stein, 2017). However, the removal of the home button also removed a failure point on the phone, specifically the mechanical home button that could wear down and fail after extended use. The removal of the button probably improves overall device reliability. In terms of message design, do the changes appear to be intrinsically simple and functionally reliable enough to be absorbed into new schema?



Figure 9. The Apple iPhone with and without the home button, the new iPhone X was the first time in the ten years since the device's release that the message design did not include the familiar home button.

Conclusions

HPT represents human performance improvement programs that are systematic and flexible. It seeks to evaluate performance gaps, identify causes of gaps, design corrective interventions, implement change, and evaluate the effectiveness of change throughout the process. Current models focus on individual change at the micro-level or organizational change at the macro-level. Ultimately, societal change at the mega-level is the futuristic modernization that HPT needs (Russell, 2007). Instructional interventions and solutions are often an integral part of a performance improvement process. Effective and efficient message design is a critical aspect of these instructional and information initiatives. As globalization flourishes and technology advances, HPT models that employ instructional message design must evolve as well. Instructional message design is an essential aspect of human performance technology.

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